

CDF/D0/AD Luminosity Task Force meeting

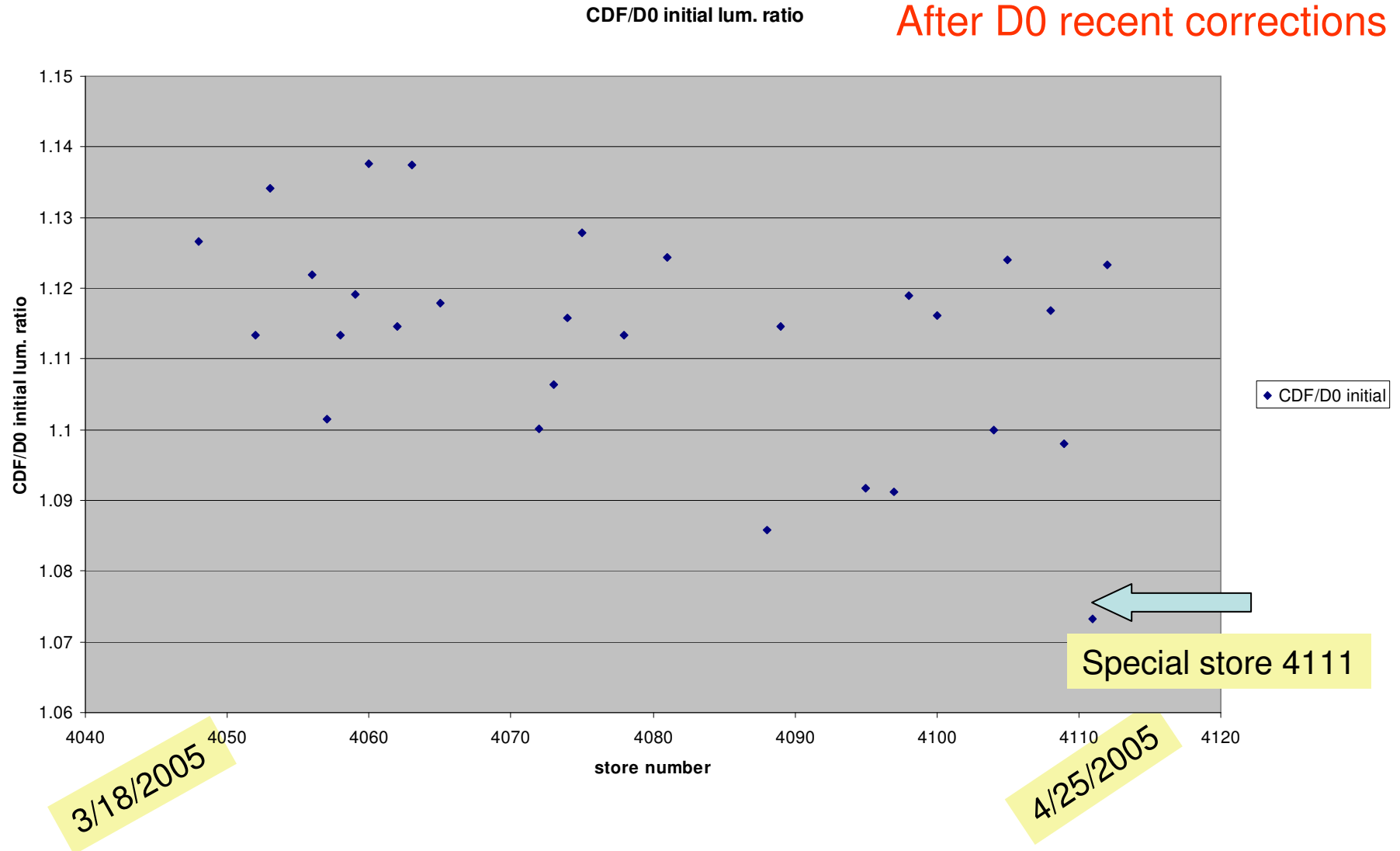
CDF and D0 luminosity comparisons
for recent stores

April 27
Vaia Papadimitriou

- The calculated luminosity assumes $\beta^* = 35$ cm in all following plots for both CDF and D0.
- The beam is assumed to be circular.
- The calculated luminosities have an uncertainty of the order of 15%.

Using stores 4048-4112

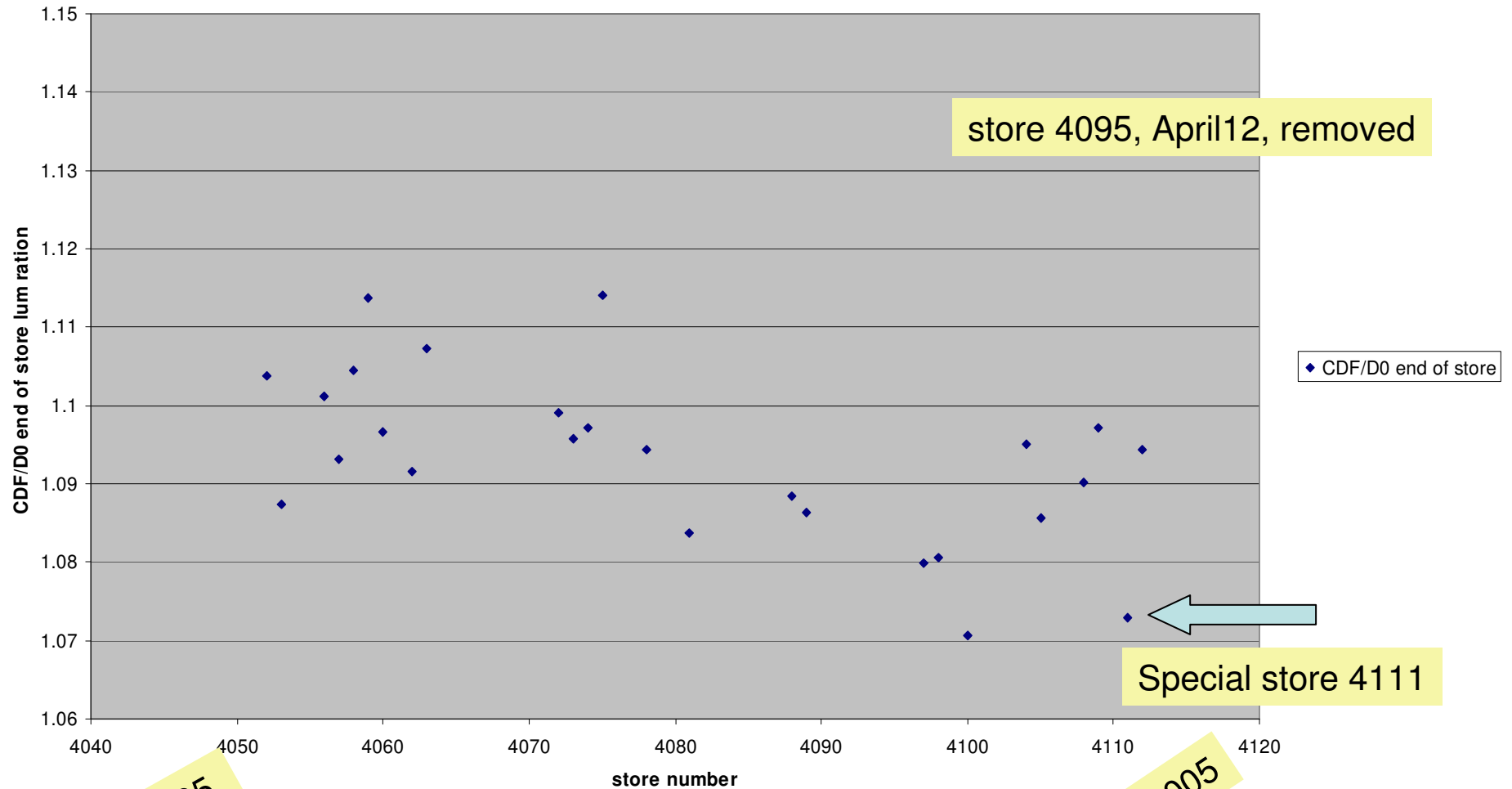
CDF/D0 initial luminosity
After D0 recent corrections



Using stores 4048-4112

CDF/D0 end of store lum. ratio

CDF/D0 end of store luminosity
After D0 recent corrections

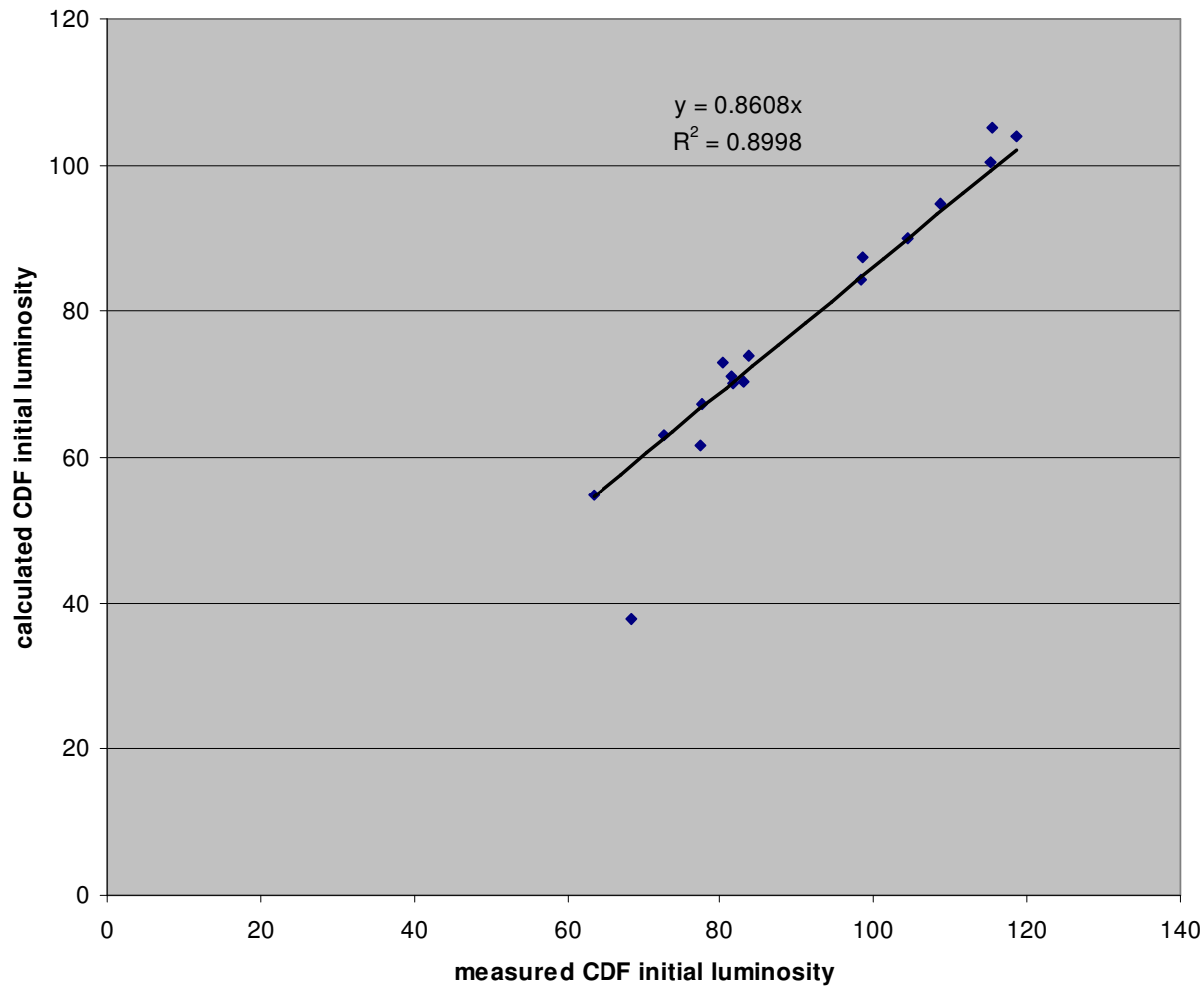


3/18/2005

4/25/2005

Using stores 4048-4112

16 calculated CDF initial lum vs measured (1E30)



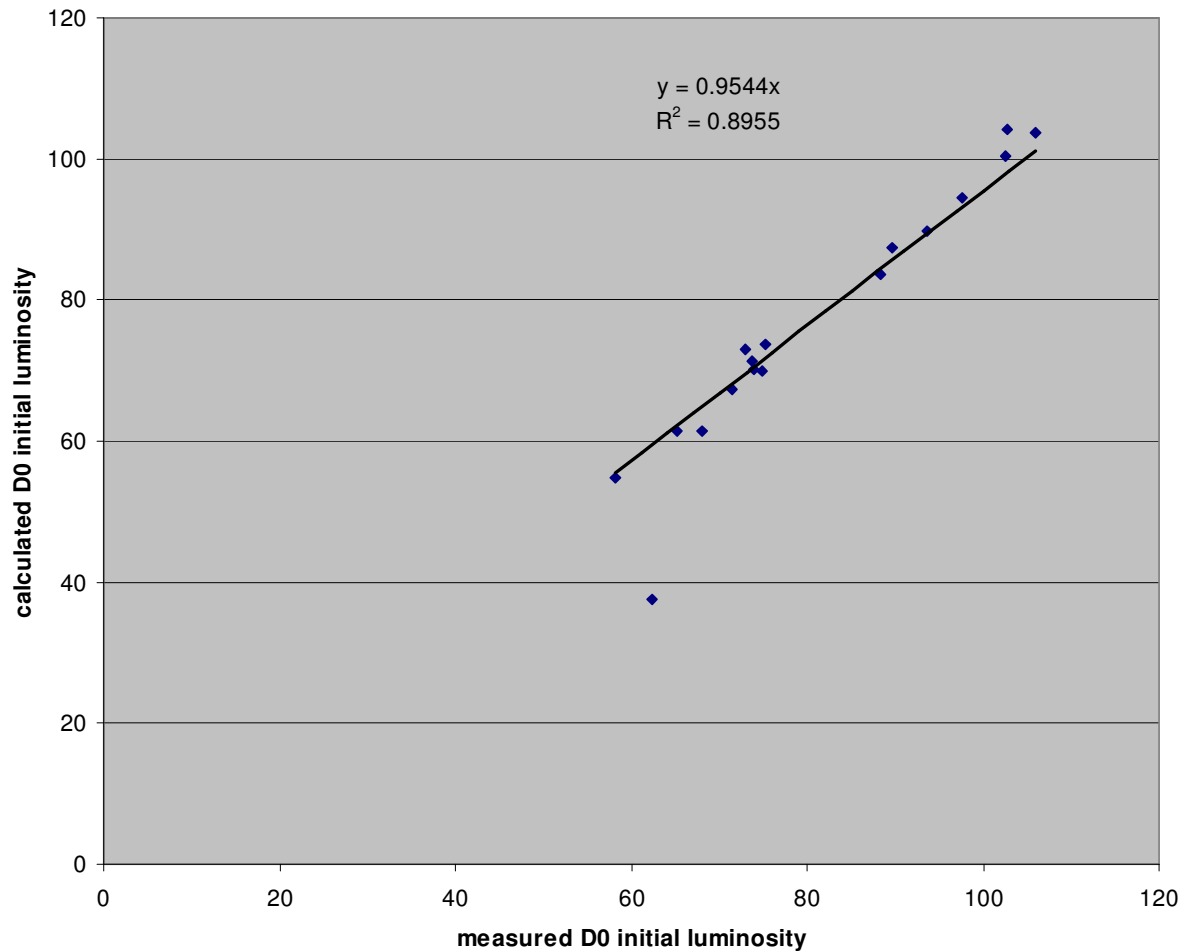
CDF initial
Expected vs measured

Store 4059 excluded
Intercept set to 0

◆ # 16 calculated CDF initial lum (1E30)
— Linear (# 16 calculated CDF initial lum (1E30))

Using stores 4048-4112

17 calculated D0 initial lum vs measured (1E30)



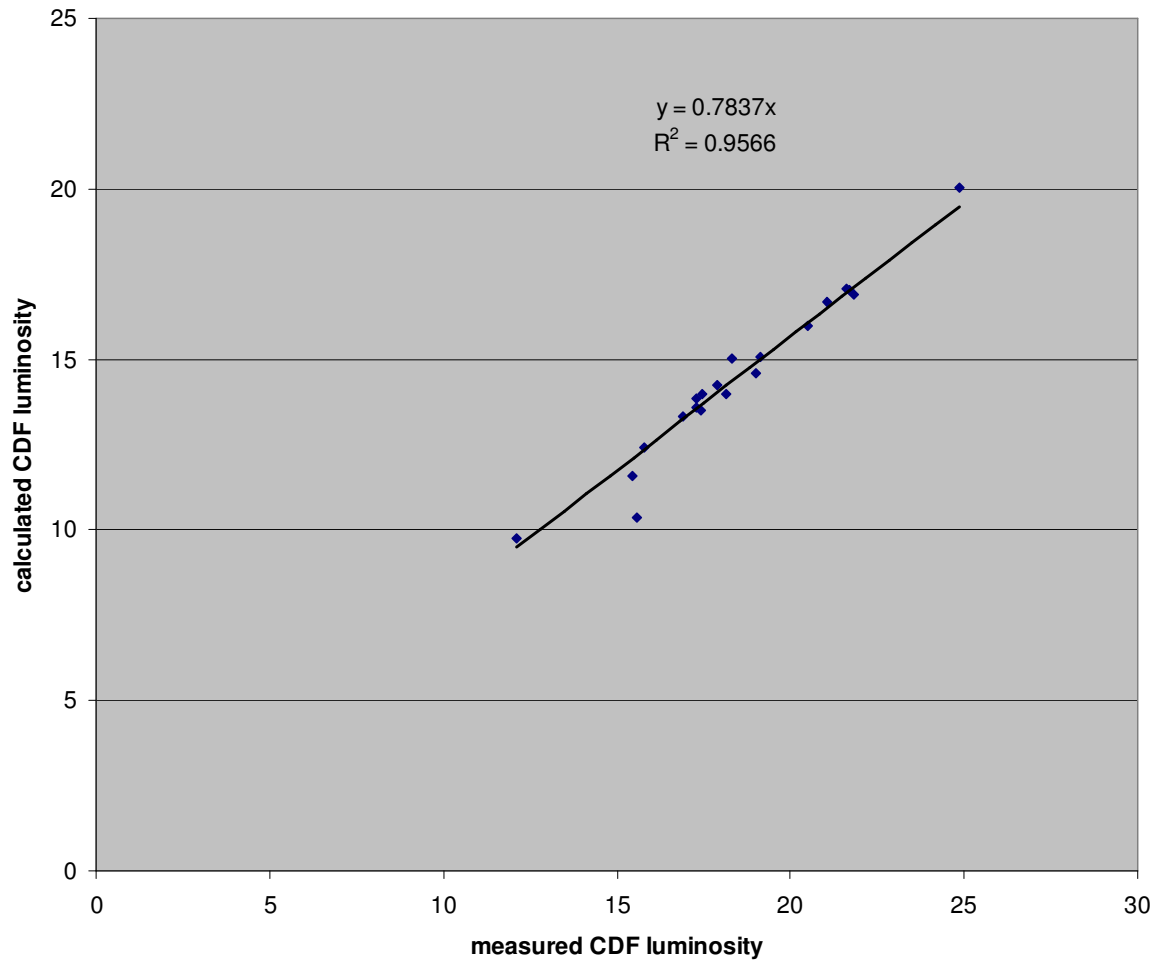
D0 initial
Expected vs measured

Store 4059 excluded
Intercept set to 0

◆ # 17 calculated D0 initial lum (1E30)
— Linear (# 17 calculated D0 initial lum (1E30))

Using stores 4048-4112

28 calculated CDF vs measured lum at the end of HEP (1E30)



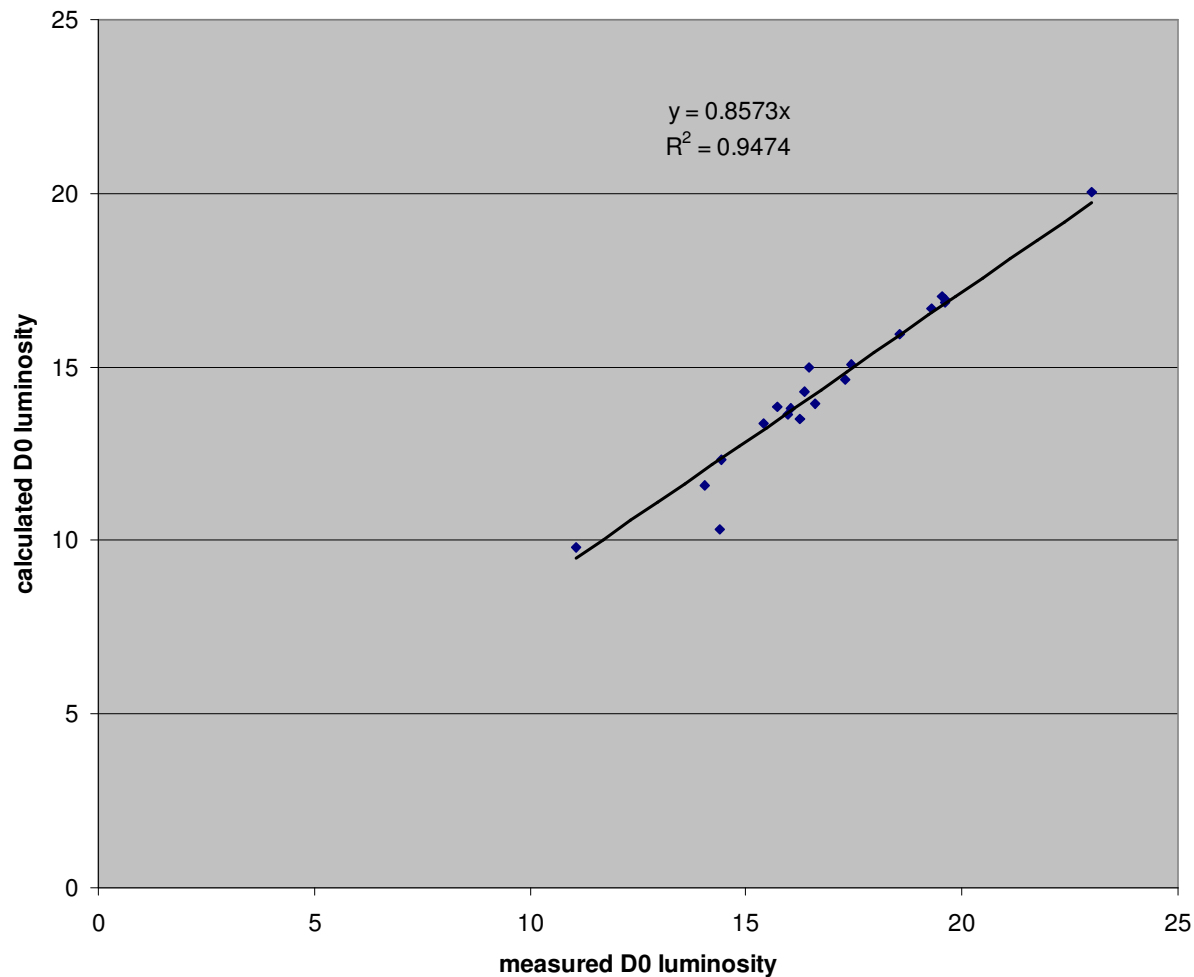
CDF end of store
Expected vs measured

Intercept set to 0

- ◆ # 28 calculated CDF lum at the end of HEP (1E30)
- Linear (# 28 calculated CDF lum at the end of HEP (1E30))

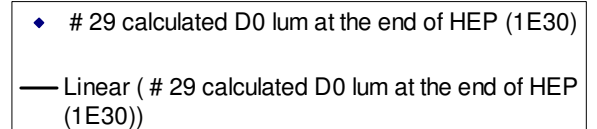
Using stores 4048-4112

29 calculated vs measured D0 lum at the end of HEP (1E30)



D0 end of store
Expected vs measured

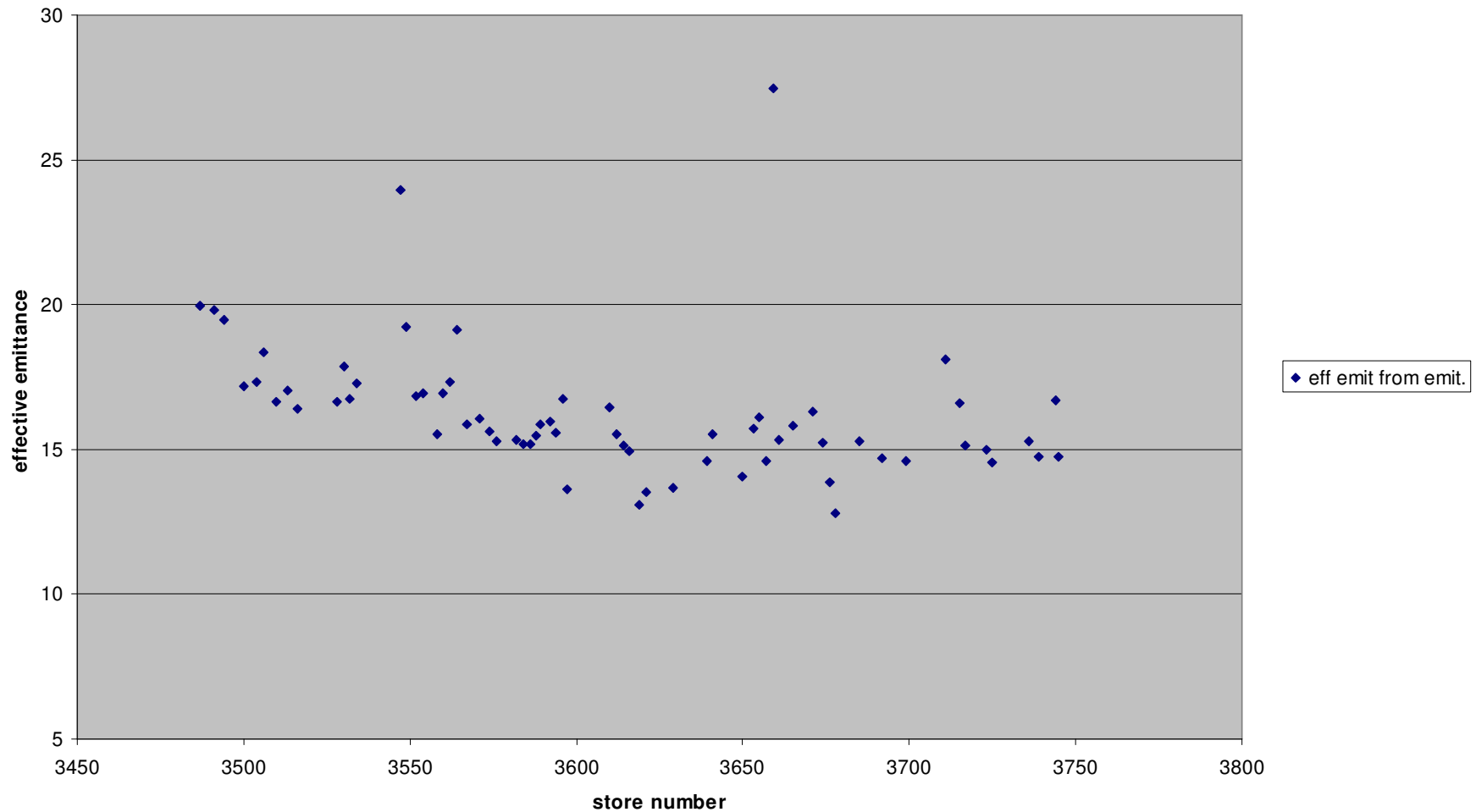
Intercept set to 0



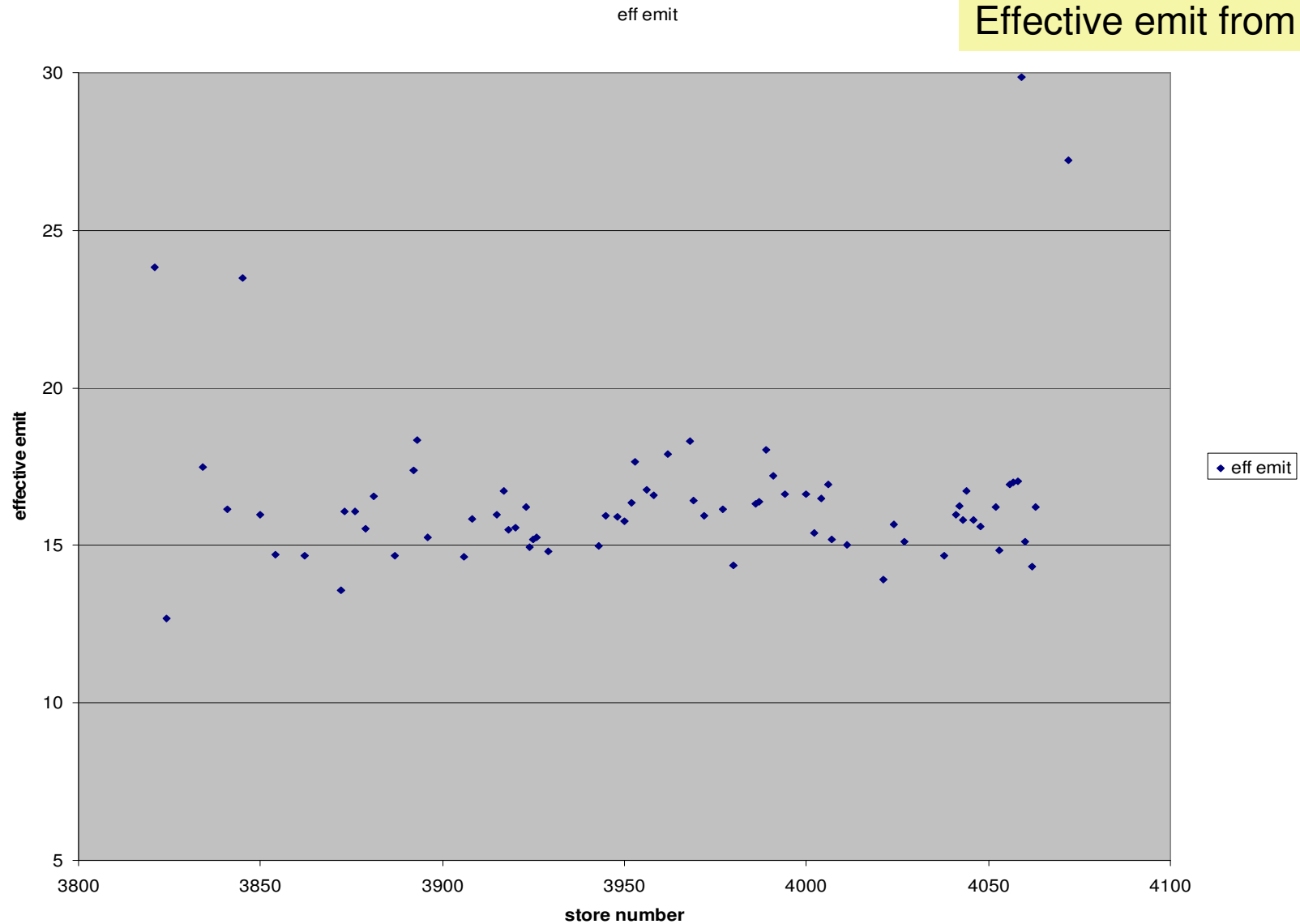
Using stores 3487-3745

eff emit from emit.

effective emit. from FW



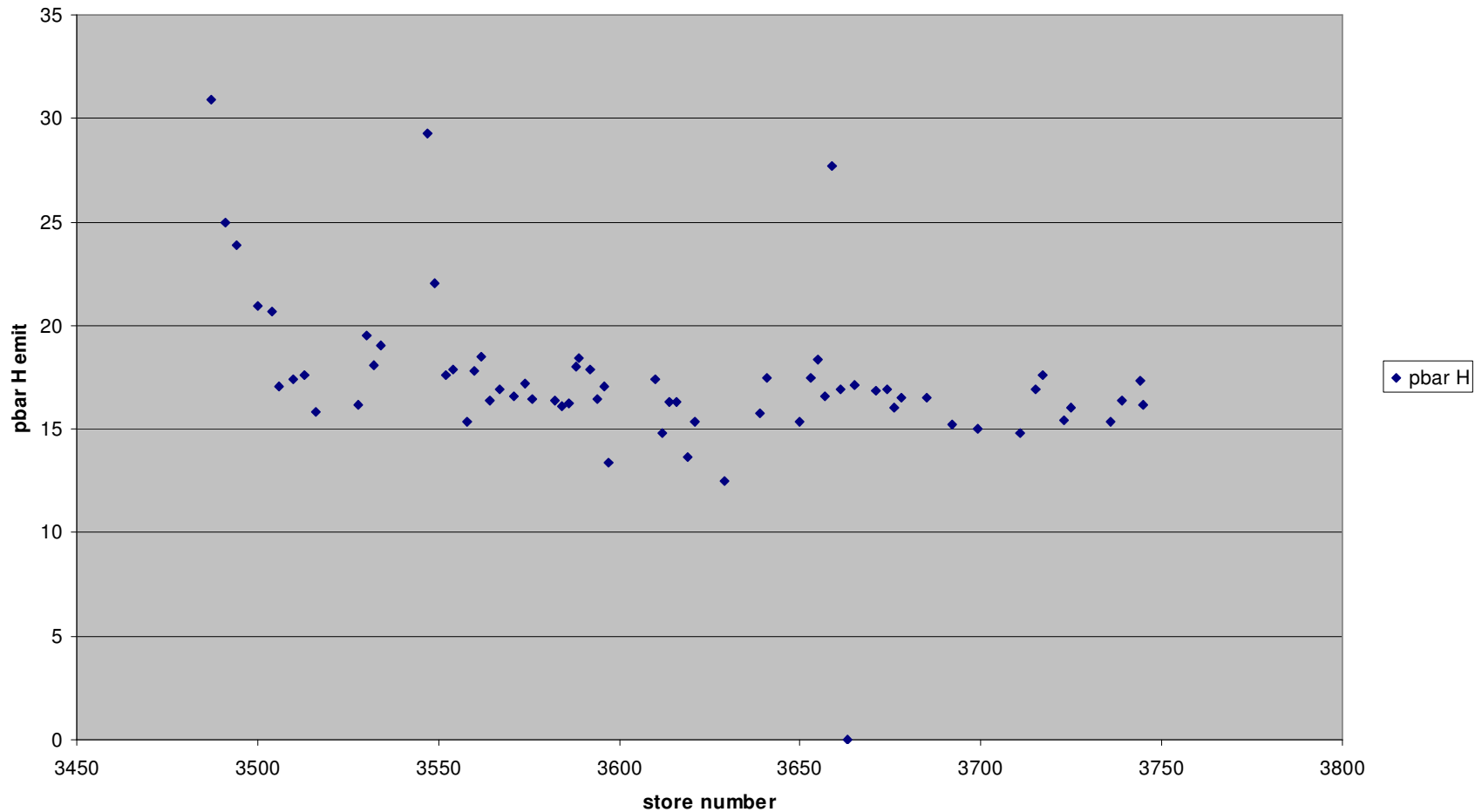
Using stores 3821-4072



Using stores 3487-3745

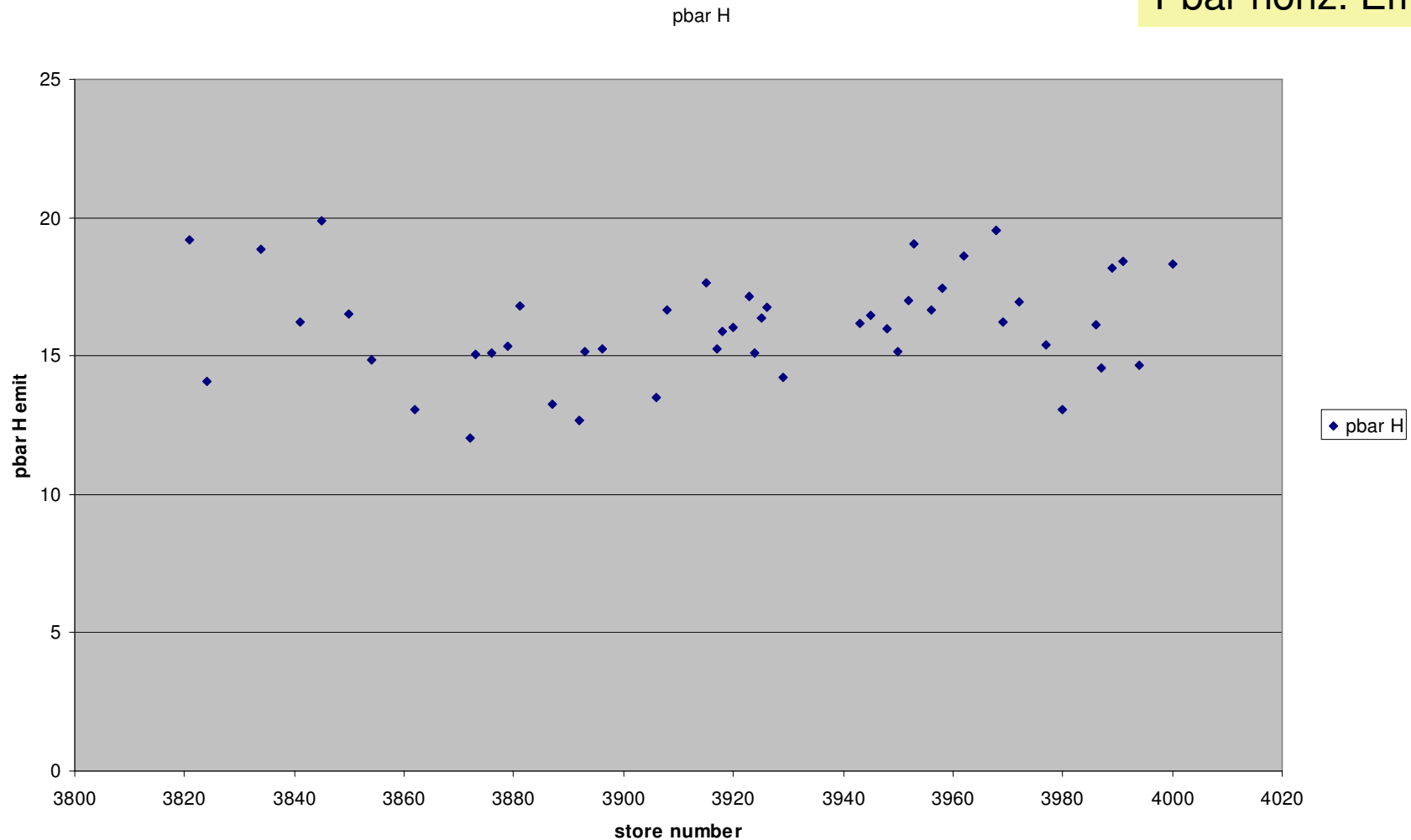
pbar H

Pbar horiz. Emit.



Using stores 3821-4000

Pbar horiz. Emit.



Conclusion

- After the D0 adjustments, the CDF/D0 ratio is approximately flat as a function of store number, and it is approximately 1.11 for initial luminosity and 1.09 for end of store luminosity.
- Calculated luminosities are smaller than measured for both CDF and D0 after the Fall 2004 shutdown. The effect is more prominent for CDF. One contribution,

Conclusion (cont)

affecting both IPs, is that the effective emittance from FW is now bigger than before the shutdown. Another contribution (for CDF) is that the measured β^* is smaller than the assumed one of 35 cm.